

Jun 21st, 3:15 PM - 3:30 PM

Case Studies III: Rehabilitation of the Yarqon River, a Mediterranean Climate Polluted Stream Ecosystem, and the Reintroduction of the Yarqon Bleak - an Israeli Endemic Critically Endangered Freshwater Cyprinid Fish

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Raz, Yonathan, "Case Studies III: Rehabilitation of the Yarqon River, a Mediterranean Climate Polluted Stream Ecosystem, and the Reintroduction of the Yarqon Bleak - an Israeli Endemic Critically Endangered Freshwater Cyprinid Fish" (2016). *International Conference on Engineering and Ecohydrology for Fish Passage*. 7.
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**Rehabilitation of the Yarqon river, a
Mediterranean Climate polluted stream
Ecosystem, and the reintroduction of the
Yarqon bleak- an Israeli endemic critically
endangered freshwater cyprinid fish**

**Yonathan raz
ISRAEL**



The Yarqon River basin - a catchment area of 1,800 km²

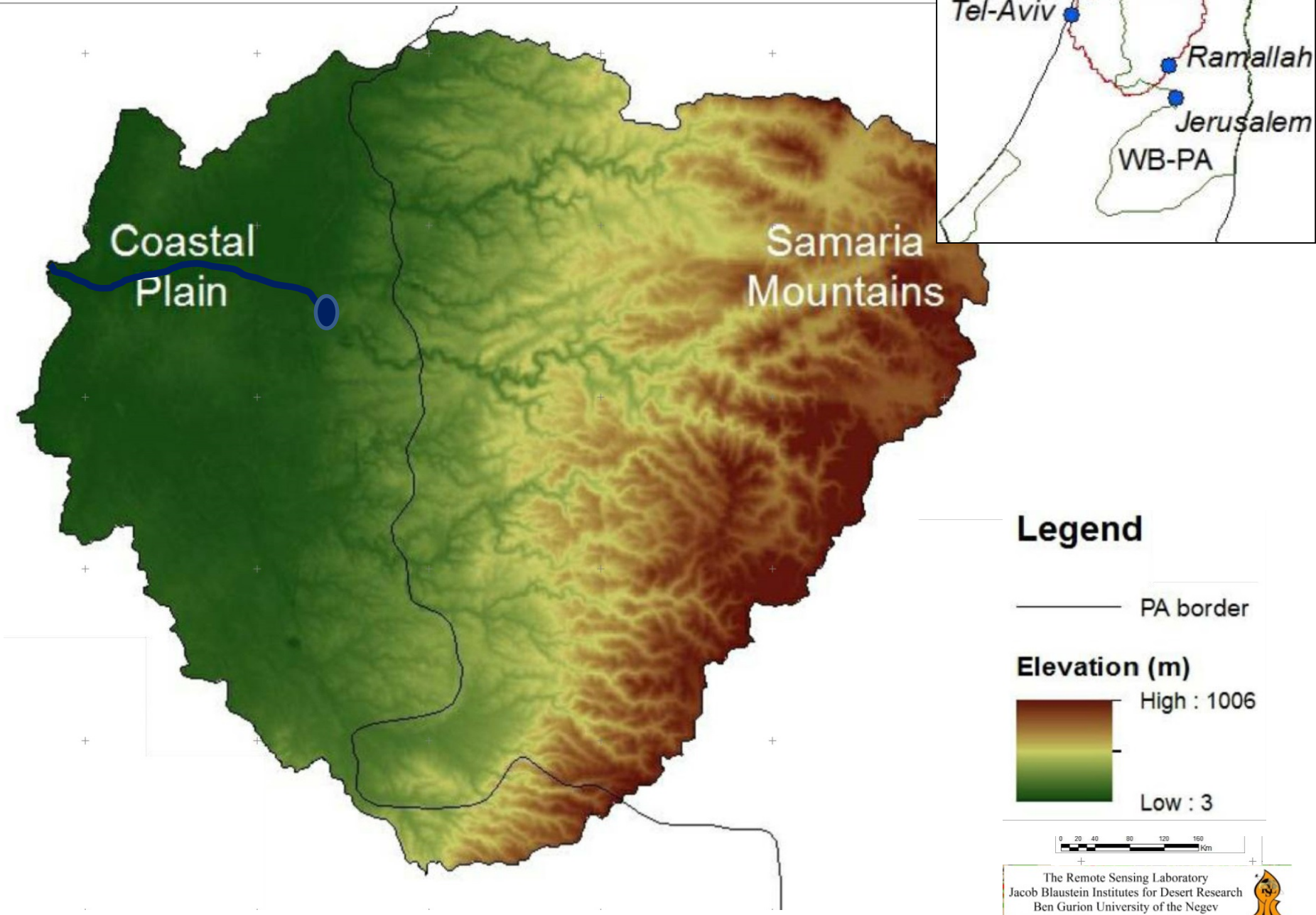


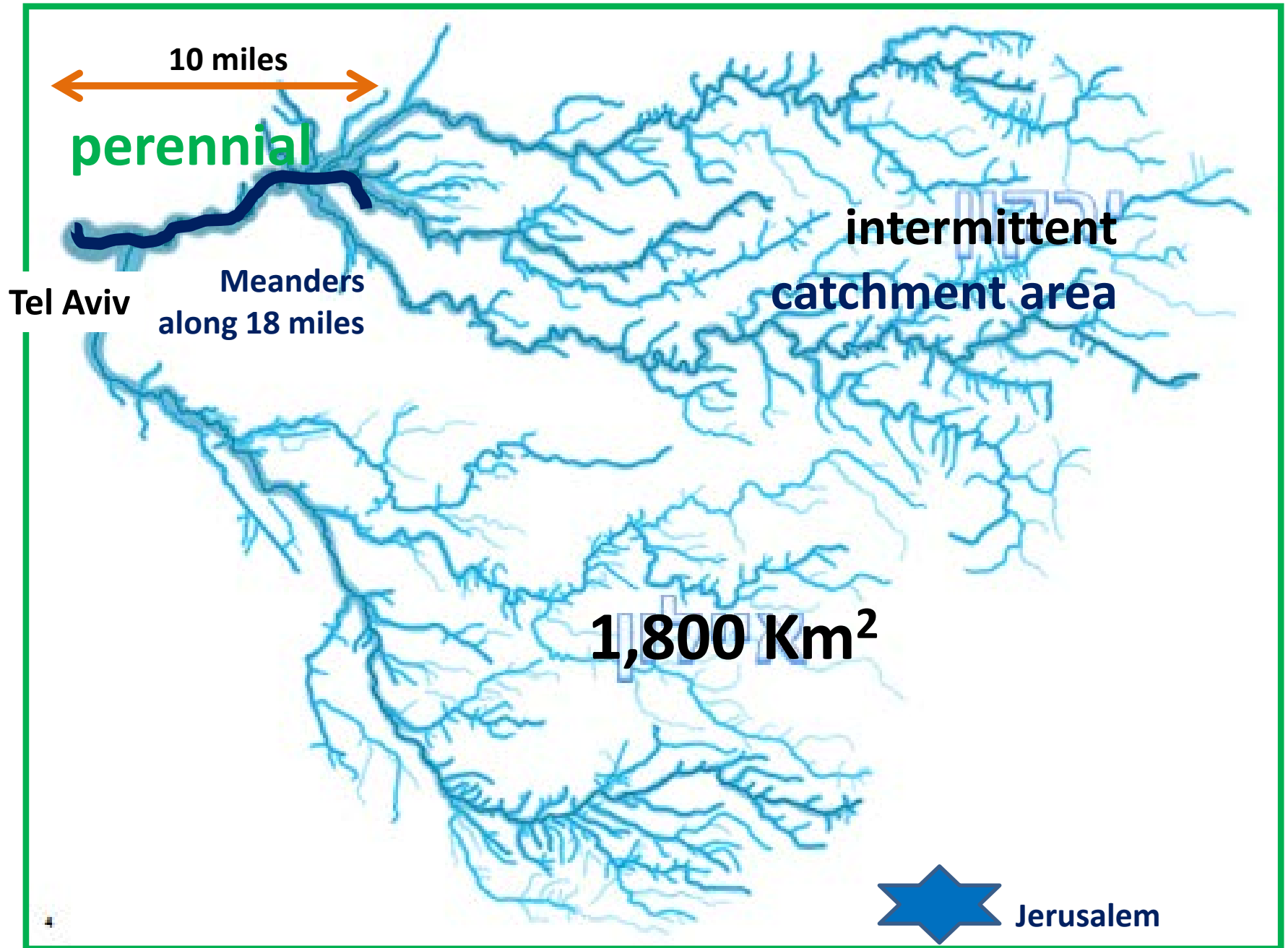
The Jordan River



the site where the Israelites are said to have crossed over into the Promised Land. Also where John the Baptist baptized Jesus.

Yarkon Basin - Elevations







Yarqon estuary in Tel Aviv



A black and white photograph of a river scene. A large, thick tree trunk is in the foreground, leaning slightly to the right. A person is sitting on the ground at the base of the tree, facing the camera. In the background, a river flows through a landscape with hills and some distant structures. The sky is bright and overexposed.

1878

The yarqon river



20th century

junk & sewage •

11-08





12/11/2008 13:11

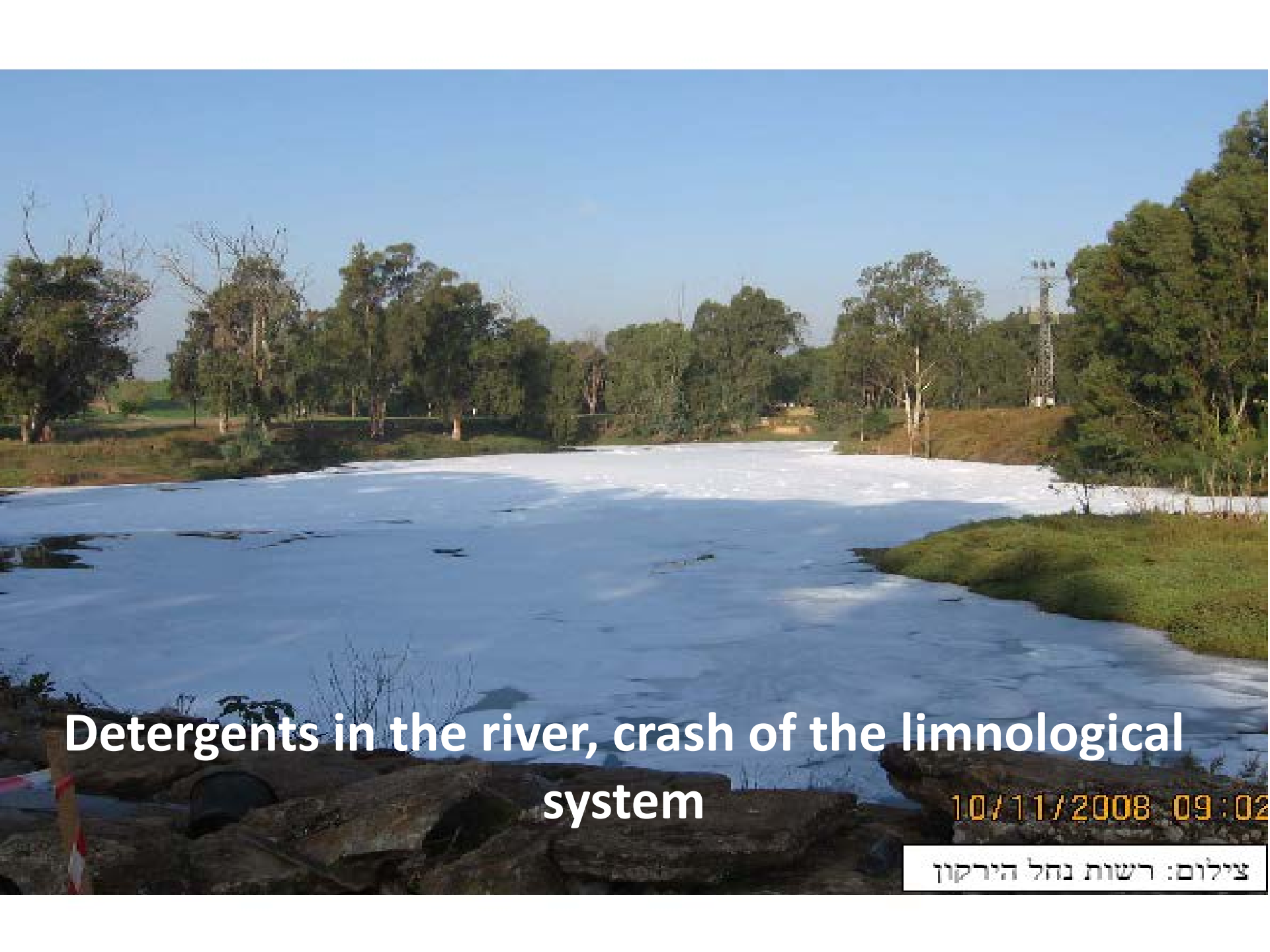
ליום: רשות נהל הירקון



Wastewater treatment facility flooded with detergents

07/11/2008

צילום: רשות נחל הירקון



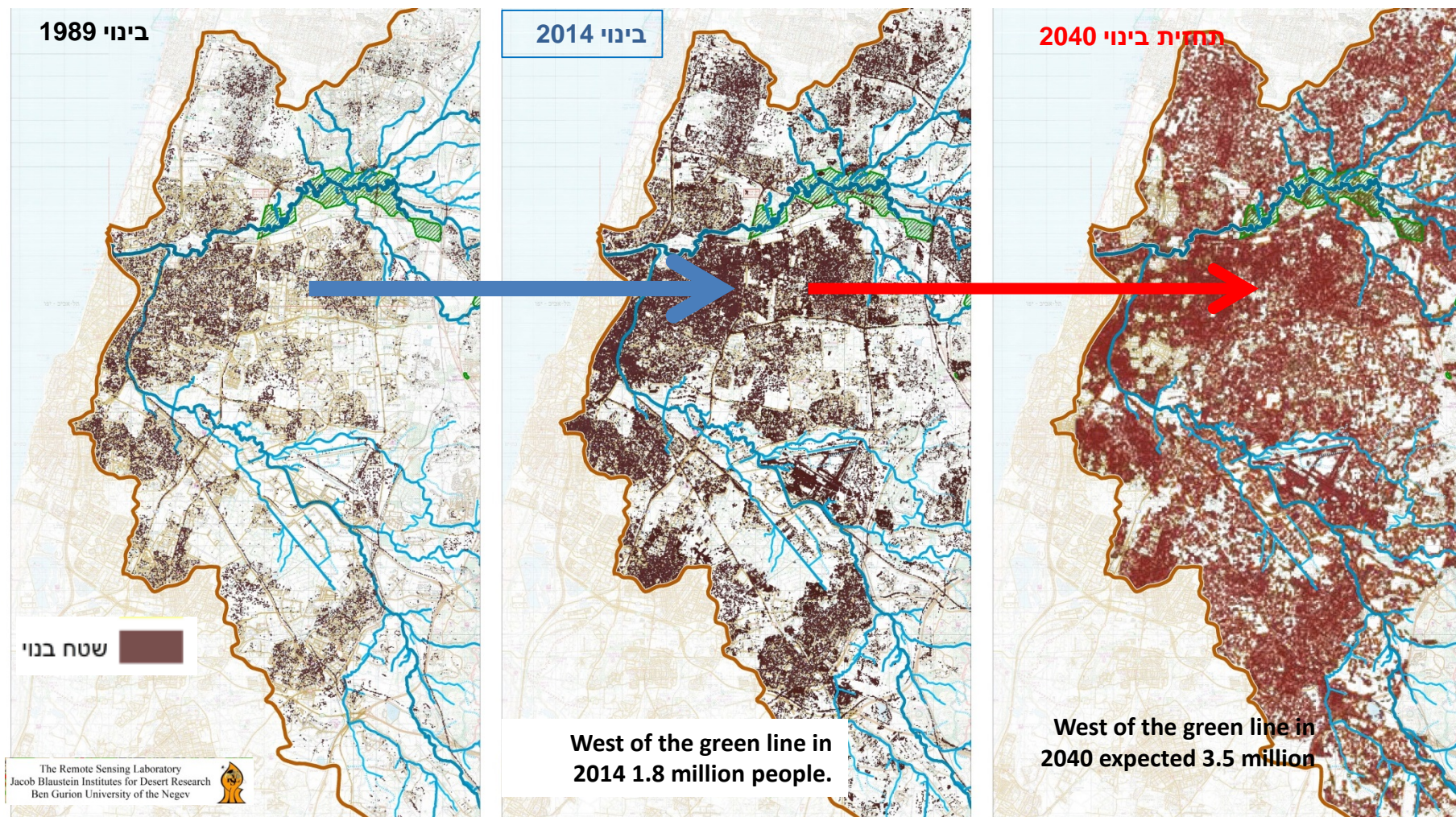
Detergents in the river, crash of the limnological system

10/11/2008 09:02

צילום: רשות נחל הירקון

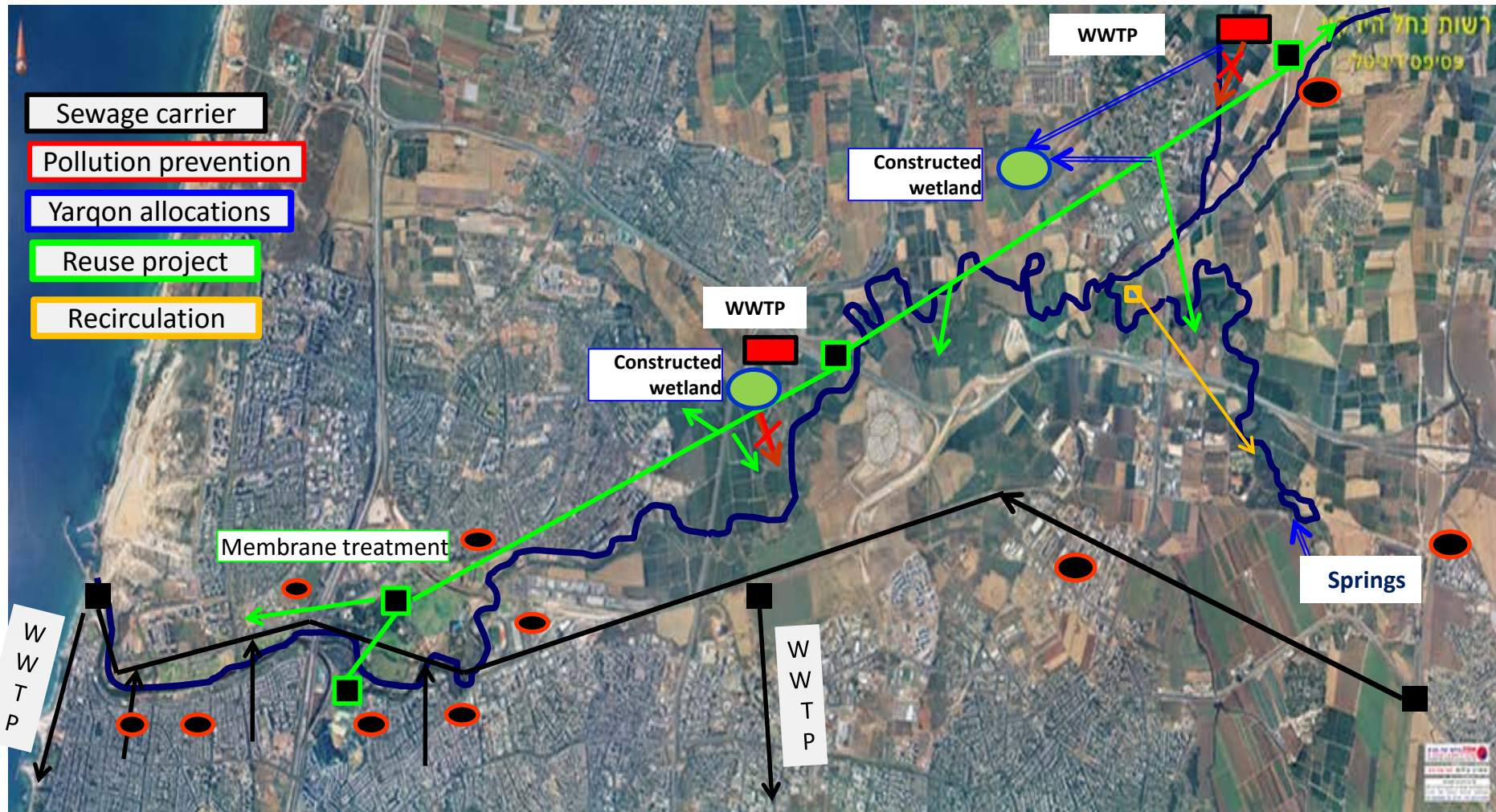


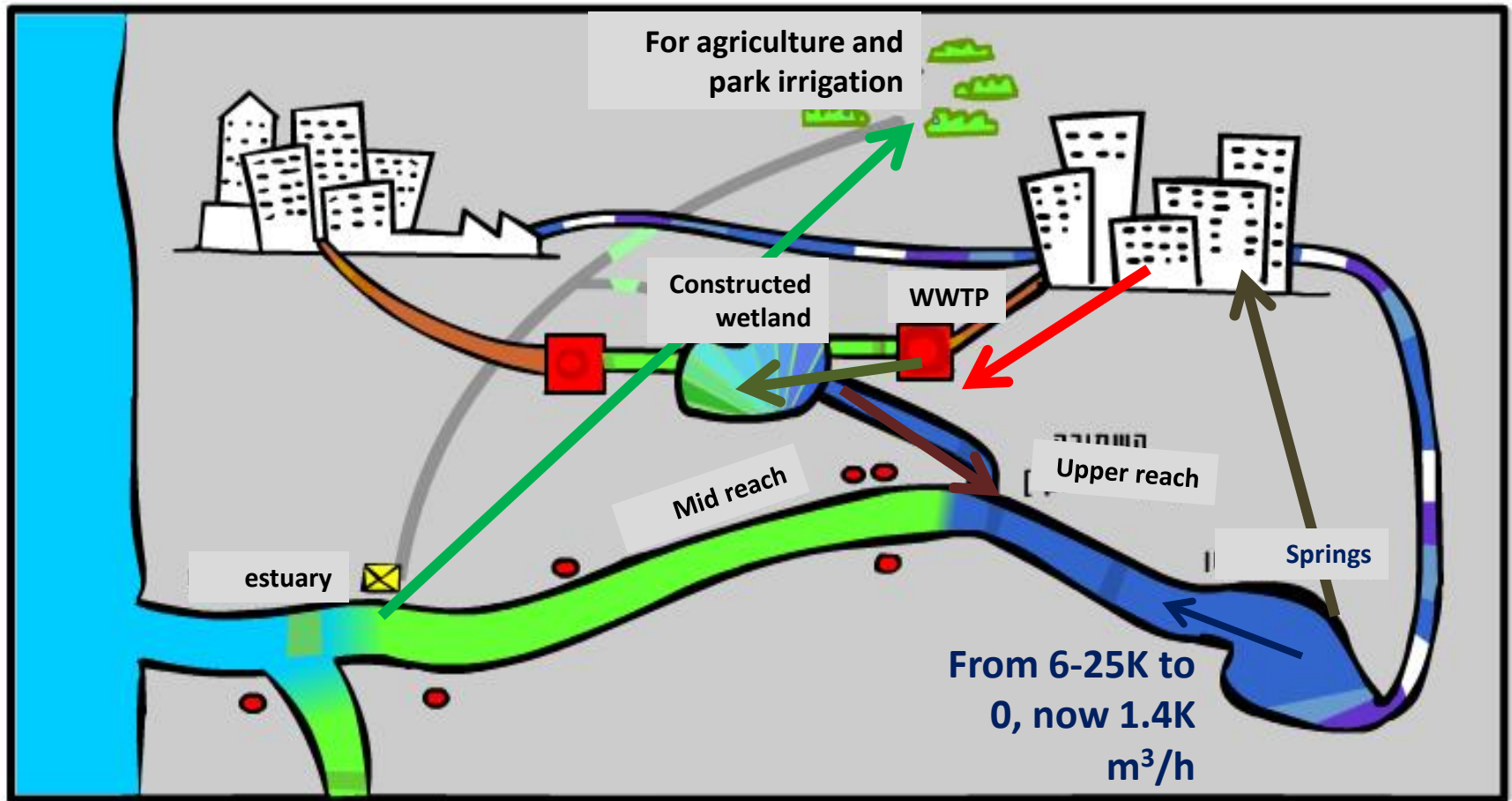
The Yarkon basin – comparing urbanization 1989-2014-2040 and predictable population growth



4%	3%	2%	Percent population growth in the basin (in millions)	
2.5	2.5	2.5	2014	* According to the Administration's data growth today is approximately 2.2%
6.7	5.2	4.1	2040	

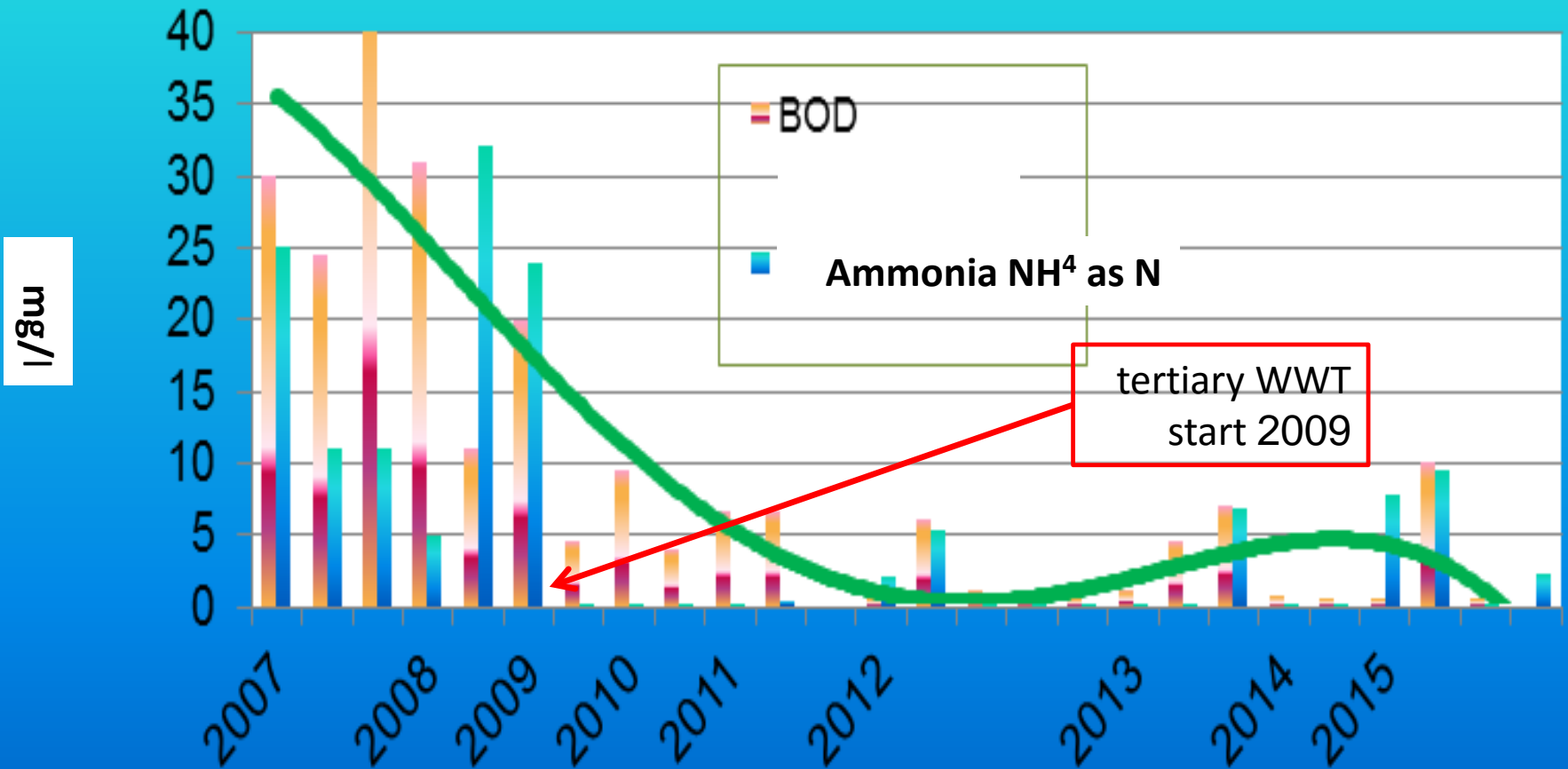
Yarqon rehabilitation project - overview





Yarqon rehabilitation project - overview

BOD & ammonia reduction in the mid reach of the yarqon river



A large, deep, muddy excavation site, possibly a construction or mining area. The site is filled with brown, muddy water and exposed earth. Two people are standing on the right edge of the excavation, looking down. The background shows a line of trees and some distant buildings under a clear sky.

remaining

08/06/2006 16:02





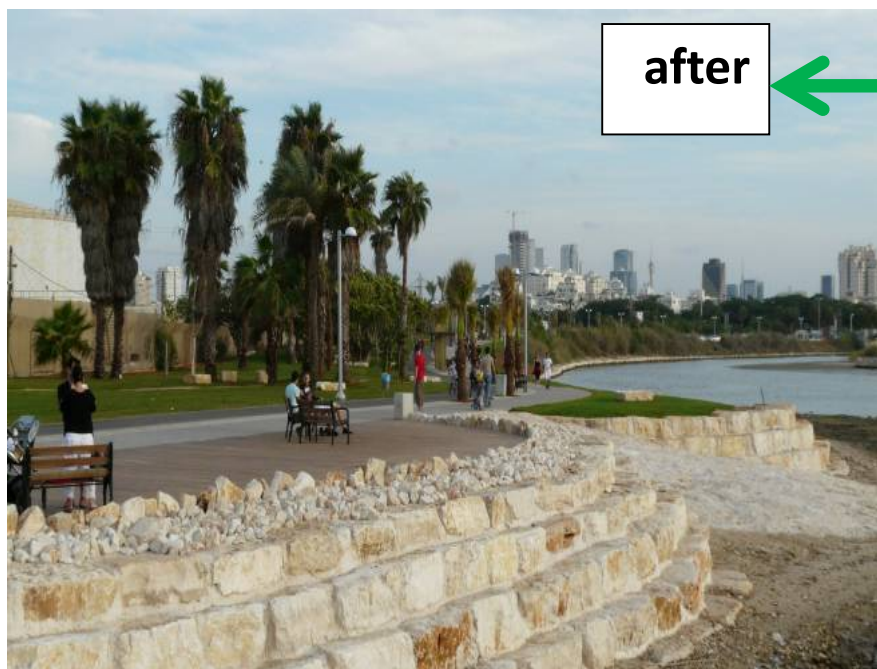




**river bank collapse
trees in danger**









**Constructed
wetland**







24/07/2013 10:58



24/07/2013 11

Fish way ladder



Migrating up steam



28/05/2013 07:25



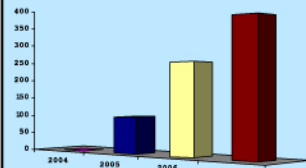
31/10/2012 10:10

Sea Water Desalination Plants

Legend

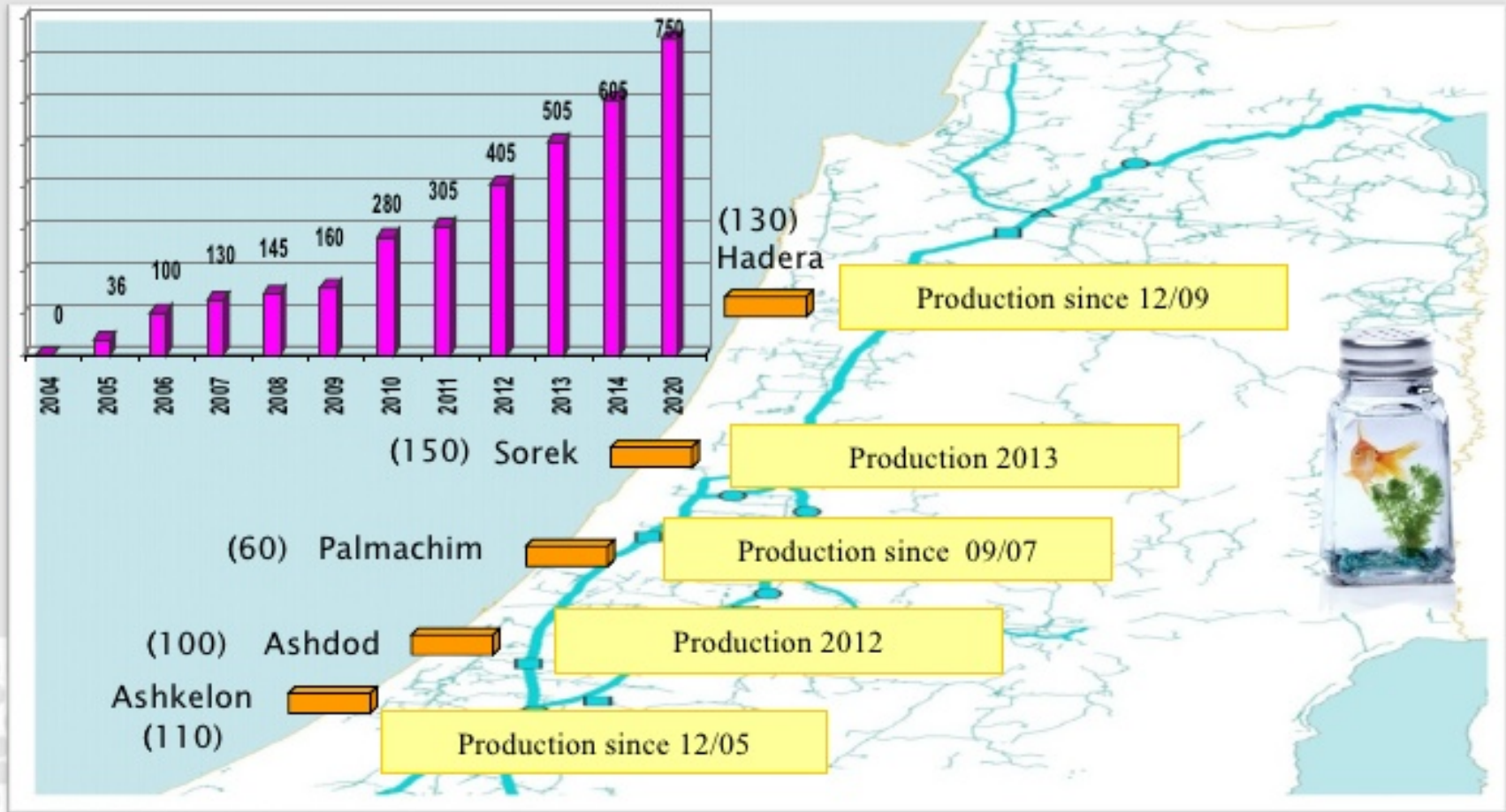
-  Palestinian Built Up Area
-  Israeli Colony
-  Desalination Plant
-  Brackish Water Area
-  Green Line (Armistice Line 1949)
-  International Borders

Desalinated Sea Water (MCM/yr)



Palestinian National Authority
Ministry of Planning
Geographic Center and Technical Support
Negotiations Affairs Department/Negotiations Support Unit

By 2016 Desalination supply 100% of domestic water consumption



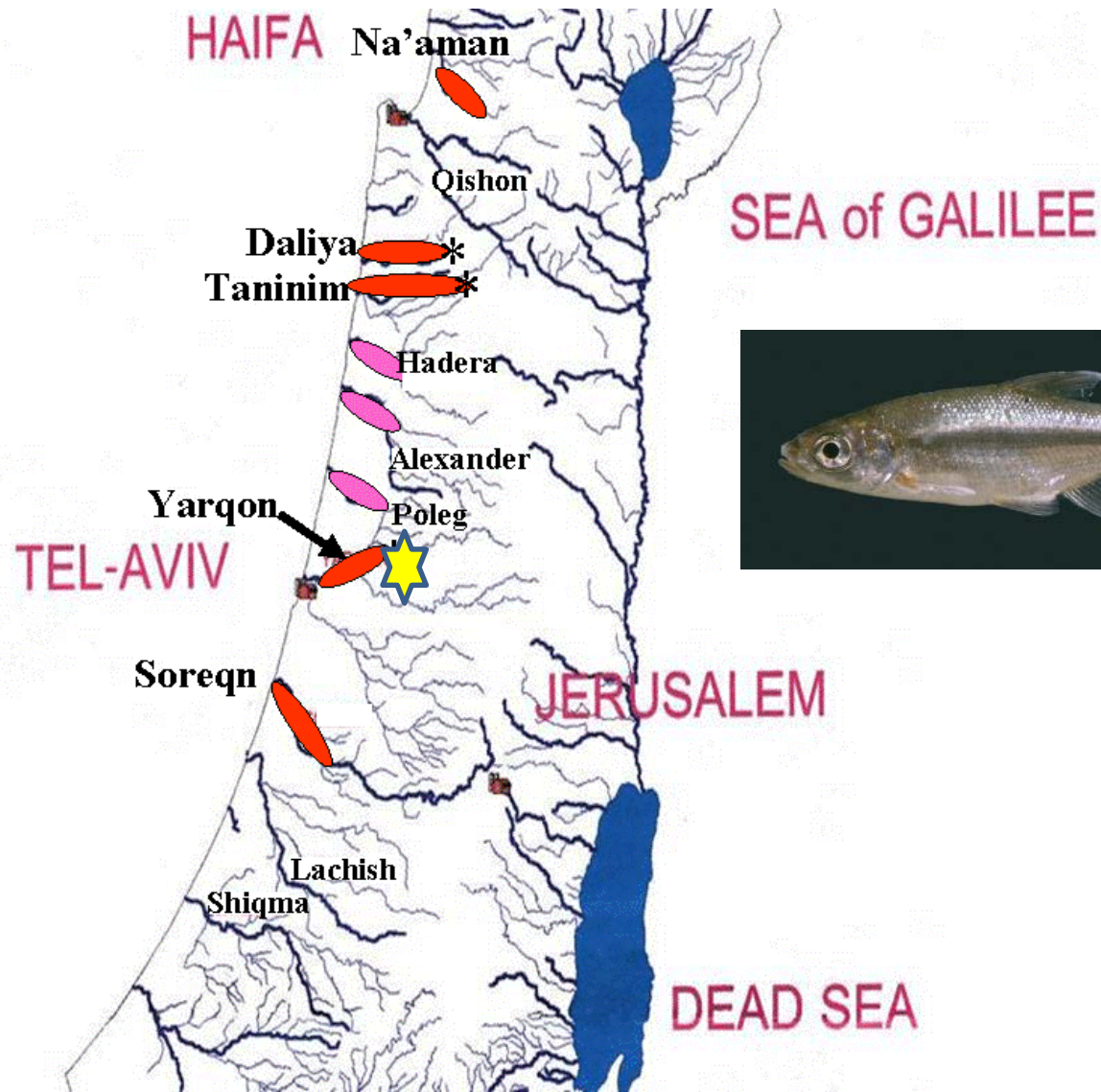
Yarqon bleak- an Israeli endemic critically endangered freshwater cyprinid fish

Acanthobrama telavivensis



5/32 of native species extinct – 16%
6/32 critically endangered – 19%

The distribution of the Yarqon bleak in the 1960s (red ovals) and in 1999 (asterisk). Pink ovals indicate heavily polluted rivers in which the fish probably occurred until 1950s



Over use of aquifer and the river source went dry



**Habitats of Yarqon bleak. - Yarqon River; a. Early spring 1999, b.
September, 1999**



Only 150 fish rescued

The facility for maintaining - breeding the fish (Ichthyological Laboratory at Tel Aviv University)

- no' Fish in tank .1
- Spawning temperature .2
- Spawning substrate .3
- Fish diet .4

In 5 years – 14,000 fish



The engineered bottom of the experimental side pond near Yarqon River



The image shows a rectangular pond with murky, greenish-brown water. The far bank is lined with tall green grass and reeds, with a dense row of trees in the background. A green arrow points from the right side of the frame towards the far bank. In the foreground, a wooden frame supports a white mesh screen net over a black pipe. A red arrow points from the text 'Screen net' to this structure. The water's surface is calm, reflecting the surrounding greenery.

engineered Spawning pond

Screen net

engineered spawning pond



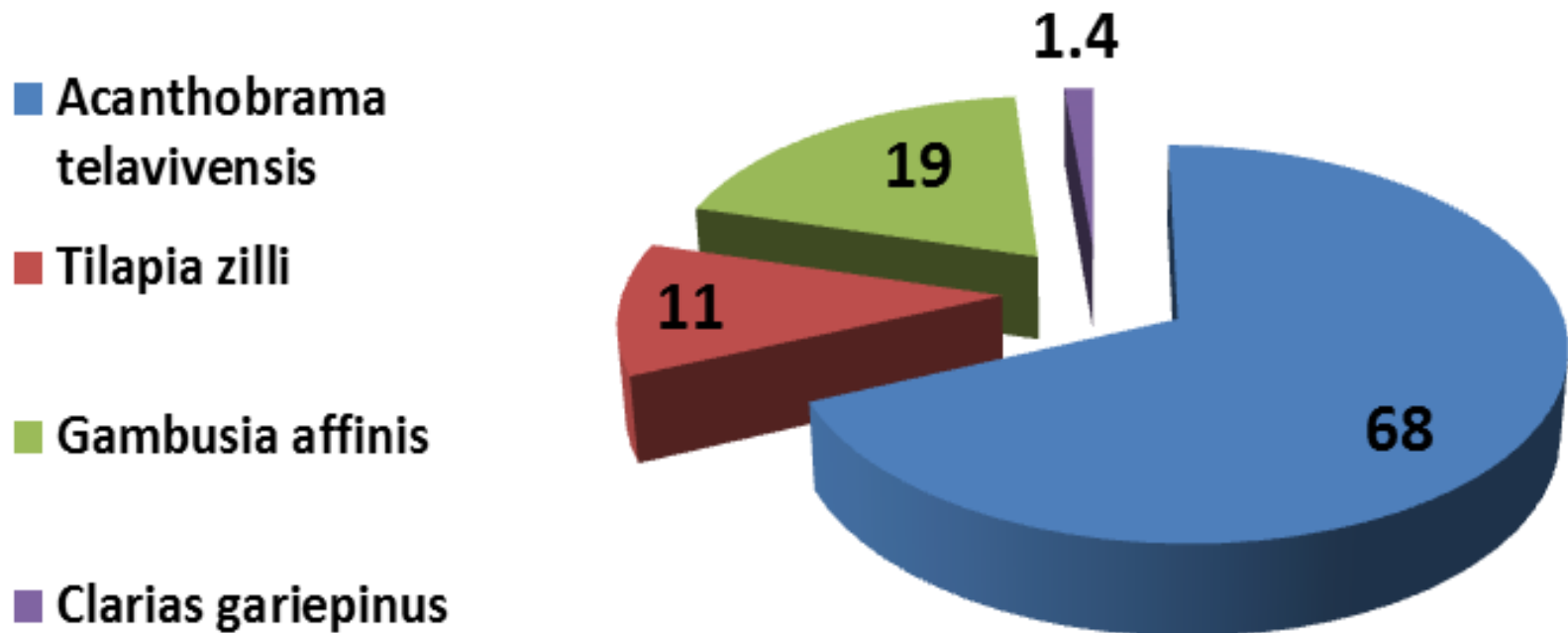
Nymphaea caerulea
Blue Water-Lily





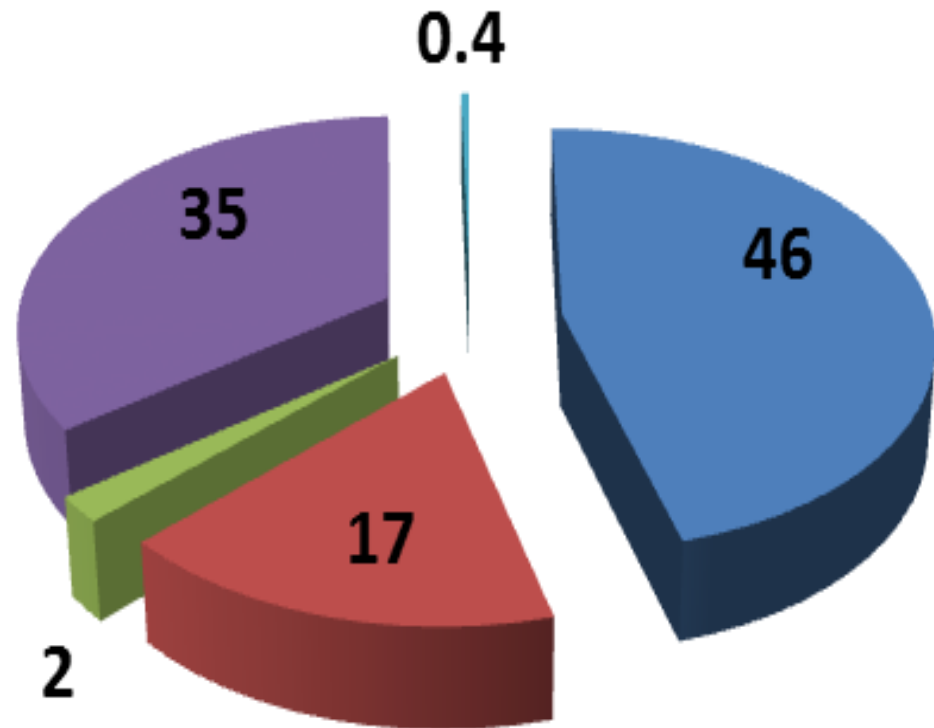


distribution of fish species at the headwaters/spring, 2014 survey



distribution of fish species at lower part of upper reach, 2014 survey

- *Acanthobrama telavivensis*
- *Tilapia zilli*
- *Cyprinus carpio*
- *Gambusia affinis*
- *Clarias gariepinus*



**To save the endangered Yarqon bleak -
raise public awareness – support of
decision-makers.**

**Breeding facility & river rehabilitation
– water allocation, habitat for spawning
and juveniles shelter.**



Thank you

A photograph of two white Nymphaea caerulea flowers with bright yellow centers, blooming among large, green, heart-shaped lily pads. The flowers are positioned in the center-left of the frame. The background is filled with more lily pads and green foliage, creating a lush, aquatic environment. The lighting is bright, highlighting the textures of the petals and leaves.

Nymphaea caerulea
Blue Water-Lily